

QA 53 – Optional Calcium Intake in Turner's syndrome

QUESTION:

The mom of an 8 yr old female with Turner's syndrome read that there is a need for "extra calcium". She is currently on growth hormones and eats a varied diet including milk and milk products. How much calcium would be sufficient for this girl?

ANSWER:

Turner syndrome (XO syndrome) is characterized by short stature, lack of ovarian development, and webbed neck. Osteopenia, and eventually osteoporosis, is a common feature in females with Turner syndrome. Although the cause is not totally understood, it is probably related to an intrinsic bone defect which is exacerbated by hormonal abnormalities (growth, gonadal, and calcium-regulating). These individuals are reported to experience more fractures during childhood and adulthood.

Growth hormone treatment is common in persons with TS; estrogen therapy is often used at or near puberty and in the adults. Evidence suggests that long-term growth hormone treatment during the prepubertal and early to mid-pubertal years optimizes bone mineral density, and improves the prognosis for adequate peak bone mass being achieved after puberty when estrogen is added.¹ A recent study of 4 girls with TS (10-17 years) showed that the addition of low-dose estrogen along with ongoing growth hormone resulted in a significant increase in calcium absorption and deposition.

Optimal calcium intake is warranted for those at risk for osteopenia and for those receiving growth hormone and/or estrogen, to maximize absorption. Although the DRI for calcium for an 8 year old female is 800 mg per day, it would seem prudent to aim for the level of 9-13 year old females, which is 1300 mg/day. There is no available data to suggest intakes greater than this.

References:

- 1) Rubin, K: Turner Syndrome and Osteoporosis: Mechanisms and Prognosis. *Pediatrics*, 102:481-5, 1998.
- 2) Beckett PR, Copeland KC, et al: Combination Growth Hormone and Estrogen Increase Bone Mineralization in Girls with Turner syndrome. *Pediatr Res*, 45: 709-13, 1999.